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LETTER

TO THE

FARMERS OF MASSACHUSETTS,

ON THE SUBJECT OF AN

AGRICULTURAL SURVEY OF THE STATE

BY THE

AUTHORITY OF THE LEGISLATURE.

BY HENRY COLMAN,

COMMISSIONER FOR SUCH SURVEY.

BOSTON:

WEEKS, JORDAN AND COMPANY,

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C I R C U L A R .

To

SIR, — Having been appointed by the Executive of the Commonwealth, under the provisions of a Resolve of the Legislature, passed at its last session, Commissioner to make an Agricultural Survey of the State, I take the liberty of addressing this Circular to several gentlemen of intelligence and respectability in the different towns, yourself among others, with a view to obtain their advice and co-operation in accomplishing such survey.

You will allow me, then, to point out the general objects of inquiry ; and to solicit particularly your attention to them ; that when I visit you, as I shall ask the pleasure of doing, you will be able to give me, in respect to those which have been the subjects, either of your experience, inquiry, or observation, the desired information. By the Resolve it is made the duty of the Commissioner “ To collect accurate information of the state and condition of the Agriculture of the Commonwealth, and every subject connected with it ; point out the means of improvement ; and make a detailed report thereof, with as much exactness as circumstances will admit.” From the terms of the Resolve it is apparent that the duty is very comprehensive ; as it embraces every subject connected with the agriculture of the State, and the means of its improvement. The more full however it is, the more useful it is likely to prove ; and exactness in the information obtained is obviously of the very highest importance. I will now point out some of the objects to which inquiries will be directed.

- I. The Nature of the Soil, in different parts of the State ; and particularly in reference to the crops cultivated.

II. The Climate, with reference to the crops grown ; the usual time of ploughing, planting, and harvesting ; the occurrence of early frosts ; the length of winter ; the average temperature ; and the quantity of rain or snow in any year.

It is desirable that meteorological observations should be made in different parts of the State.

III. 1. The Number of Acres in any town cultivated or in any form productive.

2. in wood, timber, &c.

3. capable of cultivation but unproductive.

4. waste or irreclaimable.

IV. Products.

1. The amount raised in any town in any given year.

2. The average yield of any crop per acre.

V. Crops cultivated ; among which are the following:

Wheat.	Hemp.	Herds Grass.	Potatoes.
Indian Corn.	Flax.	Clovers.	Onions.
Rye.	Tobacco.	Red top.	Cabbages.
Barley.	Hops.	Orchard.	Carrots.
Oats.	Broom Corn.	Lucerne.	Parsnips.
Buck Wheat.	Teasles.	Tall Meadow	Beets.
Peas.	Madder.	Oats.	Artichokes.
Beans.	Woad.	English Bent.	Pumpkins.
Tares.	Saffron.	Rye Grass.	Turnips.
Lupins.	Rape.	Millet.	Fruits.
	Mints.	Foul Meadow.	Garden Vege-
		Blue Grass.	tables.
	Grass for Bon-	Salt Meadow Grasses.	
	nets.	Thatch.	
	Mulberry for		
	Silk.		
	Sunflower for Oil.		
	Poppy for Opium.		
	Mustard.		
	Succory.		

VI. Other Products.

Wool.	Beef.	Mutton.	Cheese.
Silk.	Pork.	Lard.	Butter.

VII. Rotation of crops.

VIII. Modes of Cultivation.

1. Soils adapted to particular crops.
2. Preparation of the soil by ploughing and manures.
3. Seeds; selection; change of seed; quantity; preparation; steepers for seeds; preservation of seed from worms, birds, and vermin.
4. Care and management of the growing crop.
5. Harvesting. Time and manner.
6. Use and application of the product.
7. Labor required; and general expenses of a crop.
8. Value of the crop for use or sale.
9. Marketing of the product.

IX. Diseases of Crops. Blight; mildew; rust; curl; &c. &c.

X. Weeds; and Methods of Extermination.

Thistles; Canada thistles; brake; laurel; ox-eyed daisy or white weed; ranunculus or Butter cup; wood wax; pine-weed; St John's wort; charlock or cadluc; sorrel; cockle; tares; chess or cheat, &c. &c.

XI. Refuse of Crops. Preservation; value, and use for fodder or manure.

1. Value and use of the Stalks and Husks of Indian Corn, and how preserved.
2. Value and use of the Stalks and Husks of Broom Corn.
3. " " of the Straw of Wheat, Rye, Oats and Barley.
4. " " of the Haulm of Pease and Buck Wheat.
5. " " of Potato Tops, &c. &c.

It may be useful in this place to give an outline of the manner in which it may be desirable to conduct the inquiries. I will take for examples, Wheat and Indian Corn.

Wheat.

1. History of its Cultivation in the State.
2. Kinds; bearded or bald; flint or soft skin; red or white; summer or winter; where obtained; by what name or quality designated; average weight per bushel.
3. Amount of any particular crop; extent of land sown.
4. Condition of the land; nature of the soil; whether newly cleared; burnt; swarded; or how used for two or three years previously; how prepared for sowing.
5. Kind and quantity of manure; use of lime; plaster, or any compost manure.
6. The quantity of seed to an acre, and preparation of the seed; advantages or evils of steeping the seed.
7. The time of sowing; week and day, if possible to be ascertained. The importance of such an inquiry as this will appear for the reasons which follow:

It is strongly recommended that wheat should be sown before the 14th of September, so as to be well rooted before winter; thus affording a better protection against frosts. Or else so late as not to germinate before spring; this method has been tried. Or frozen in water in the autumn and kept so until the spring, which experiment is reported to have been successful. It is often desirable for wheat to follow Indian corn; but Indian corn in general cannot be taken off in season to get the wheat sown. The discovery of any mode, such as the above for example, by which the necessity of this early sowing could be obviated, would be of great advantage.

Wheat sown early is more likely to have passed beyond injury from the hot, damp, steaming weather, which occurs in July and occasions rust. Query; whether late sown wheat is not likely to pass beyond that season before it gets into a condition to be injured, which is while it is in the milk.

Late sowing of wheat, as in some cases the last of May and the first of June, it is stated, has carried the season of flowering

beyond the the time of the wheat insect, and the crop has been saved.

8. The diseases or accidents, if any ; whether affected by rust, smut, or mildew ; and any circumstances of weather, situation, or particular condition of the plant connected or contemporaneous with such occurrence. The situation or exposure of any blighted field, whether high and airy, or low, damp, and confined.

9. Whether or not affected by the vicinity of barberry bushes.

10. Whether winter killed or not ; under what circumstances as it regards the forwardness or lateness of the plant ; and how affected by the snow.

11. Whether attacked by the Hessian fly or other insects ; and preventives, if any.

Wheat is, in many parts of the country, subject to injury from an insect or worm, whose appearance is comparatively recent ; and whose habits are not well ascertained. He is making dreadful havoc in the wheat regions, producing in many cases, an entire destruction of extensive fields of the most promising appearance ; and has advanced at the rate of about forty miles a year. The same insect, it is believed, though the identity is not perfectly ascertained, has attacked barley, rye, and oats with alarming success. The cultivation of barley has on this account been abandoned in some parts of the State ; and so has the cultivation of wheat in what have heretofore been deemed some of the most productive wheat regions in New York.

Inquiries and experiments on this subject are of immense importance. A perfect preventive or security would be worth millions to the country.

12. Remedies or protection against blight, or other accident.

13. The extirpation of weeds particularly injurious to the wheat crop, such as tares, cockle, chess, garlic, and the Canada thistle ; and any machinery by which the grain may be cleansed of "foul stuff."

14. The experience of farmers in the cultivation of wheat crops successively on the same land ; and in sowing clover with the wheat with a view to ploughing it in as manure for a succeeding crop ; and whether customarily ploughed in with the stubble ; or depastured ; or mowed for one or more years.

15. The general subject of sowing grass with grain ; and the value in such case of a stubble crop for winter fodder.

16. Harvesting.

Time and state of cutting ; and whether early or late cutting be preferable ; the time, in the opinion of some persons, making a material difference in the amount and value of the crop.

Modes of harvesting ; reaping or cradling ; and cost by day or piece work ; average amount of a day's work.

17. Threshing and Cleaning.

Threshing Machines. Winnowing Machines.

18. Manufacture of Flour. Various qualities. Number of bushels required for a barrel. Miller's charges and profits.

19. Construction of Mills and flouring Machinery. Water, steam, and wind power. Domestic Mills.

20. Value and uses of bran.

21. Value and uses of Wheat Straw.

22. Value of a wheat crop compared with other crops. Average yield.

23. Capacity of the State to furnish its own wheaten bread.

24. Experiments and observations in regard to this crop. Causes of its general failure.

25. Some general estimate of the quantity and cost of imported flour consumed in any village, town, or county.

Indian Corn.

1. Kinds. Gourd seed. White soft Corn. Sweet Corn. Flint Corn.

2. Varieties of Flint Corn. White ; yellow. Weight per bushel. Comparative amount of cob and grain in different varieties.

3. Soils most suitable. Preparation of land. Crop, if any, which it may best succeed. Fall or spring ploughing. How often may it be repeated on the same land.

4. Manuring ; kinds of manure most suitable ; quantity to the acre ; how distributed—in hills, drills, or spread—applied green or rotted.

Lime ; its value to Corn—how applied.

Gypsum ; its value to Corn—how applied.

Ashes ; its value to Corn—how applied ; crude or spent.

5. Seed—how selected ; effects of selecting in increasing the

crop; how saved; steeped or sowed dry; various steeps; copperas water; lye; rolling in tar; coating with gypsum or ashes; quantity of seed.

6. Time of planting; modes of planting—in hills or drills; distance of plants; protection against vermin or birds.

7. Cultivation. Weeding; ploughing or harrowing among corn; use of a cultivator; number of hoeings; hilling or earthing up. Topping; suckering; stripping; with the effects upon the crop.

8. Value of the corn stalks and leaves when taken green; and mode of curing.

9. Alternate rows of corn and potatoes. Planting pumpkins or turnips among corn. Sowing grain among corn for a succeeding crop.

10. Harvesting. Gathering by the ear; or cutting up and stacking in the field.

11. Preservation of the Grain. Construction of Granaries.

12. Preservation and comparative value of the stover or dried fodder.

13. Machines for shelling.

14. Average yield per acre; value of the crop; cost of cultivation from beginning to readiness for the mill. Kiln-drying.

15. Value and uses of Indian Corn—for Dairy Animals.

“	“	“	for fattening stock.
“	“	“	for swine.
“	“	“	for horses.
“	“	“	for distillation.
“	“	“	for extraction of oil.

Having thus given a sketch of the manner in which it is proposed to conduct the inquiries on particular subjects, in respect to which it would confer an obligation on me to have your suggestions, or those of any other experienced farmer, I proceed to other great topics, to be embraced by the survey.

XII. Manures.

1. Animal Manures.

Animal excrements; varieties; comparative value; preparations; uses.

Decayed bodies. Refuse of slaughter houses.

Bone; horn; hair; feathers; wool.

Fish. Fish oil. Gurry and blubber. Soap suds.

2. Mineral Manures.

Lime in various forms and compounds.

Salt. Marine Shells. Gypsum. Clay. Sand. Marl.

Dock Mud. Ashes of Mineral Coal. Burnt Clay.

3. Vegetable Manures.

Ashes of wood and peat. Soot. Tanners' Waste. Straw.

Leaves. Sea Weeds. Rape Dust. Street Manure.

Green Dressings, ploughed in. Buck Wheat. Clover.

4. Artificial Manures. Composts.

5. Modes of applying Manure.

Mixed or clear; solid or liquid; in drill or broadcast; in fresh or fermented and decayed state;—at what season of the year or crop;—annually, or how often; in what quantity.

Use and application to permanent pastures and mowing lands.

6. Manure Houses or Cellars; Vaults for the preservation of urine; and provisions for forming compost manures.

Machines for the application of liquid manures.

XIII. Live Stock.

1. Black Cattle. Horses. Sheep. Swine. Poultry.

2 Comparative value of different Breeds of animals for Stall, Work, and Dairy; and notices of herds or individuals of improved Breeds, with places where found.

3. Animals known among us. Native; Hereford; Black Spanish; Devon; Holderness; Yorkshire; Alderney; Ayrshire.

Improved Durham Short Horns.

4. The subject of Breeding.

XIV. Animals for Labor.

Horses and Oxen. Comparative value. Mules. Cost of keep ; harness ; shoeing ; deterioration or improvement.

XV. Animals for Beef.

1. Sex most eligible.
2. How reared ; as calves, how fed ; how long with the cow ; how managed the first winter.
3. What age at maturity. Age best for fattening.
4. If pastured—average number of acres to an animal.
5. If soiled ; how managed and fed.
6. If stalled on dry feed, how fed ; how long kept ; amount of hay consumed per day : of meal ; of vegetables ; kinds of meal ; kinds of vegetables ; how prepared ; meal ground with or without cob ; mixed or unmixed ; wet or dry ; cooked or raw.
7. Use of flaxseed ; oil ; and oil cake in fattening.
8. Gain per day ; per month.
9. Machines for cutting and steaming food.

XVI. Market ; Returns of Brighton and Danvers Markets.

1. Animals—how sold—on the hoof ; or by weight after slaughter. If by weight, how determined ; customs of butchers ; what parts weighed ; what considered as perquisites. Liabilities to error or fraud, if any ; customs in other markets.
2. Different parts—how disposed of ; relative value.
3. Modes of curing, packing, inspecting beef, pork, hams, &c. &c.
4. Drift of animals ; customs of Drovers ; expenses ; loss in weight by travelling.

XVII. Animals for the Dairy.

1. Choice of Breeds. Examples and history of Cows of extraordinary product.
2. Size and color as affecting produce. Continuance in milking. Effects of early coming in. Disposition of the calf. Times of milking.
3. Average yield of a good cow in milk ; in butter ; in cheese.
4. Trials of milk as to quantity of cream ; of butter ; and of cheese, per gallon.

5. Modes of feeding ; vegetables ; grain ; or meal ; how given or prepared ; quantity.

XVIII. Dairy Produce.

1. Butter ; modes of making and preserving.
2. Cheese ; modes of making and preserving.
3. Comparative profits of making butter and cheese.
4. Use of skim milk, butter-milk, and whey.
5. Advantages, if any, of giving it to the Cow.
6. Value of dairy refuse for Swine.
7. What proportion between number of Cows kept, and number of Swine kept.
8. Steaming ; heating ; freezing milk, with comparative advantages of each method for raising cream.
9. Effects of different kinds of salt upon butter. Use of sugar and salt petre for butter. Coloring matter for cheese.
10. Protection from vermin.
11. Grasses for Dairy purposes.
12. Churns ; presses ; spring houses ; pans.

XIX. Swine.

1. Breeds. Maturity, and age for fattening. Average weight when fattened.
2. Mode of raising ; in sty or at large ; pasturage or soiling on clover.
3. Fattening ; value of vegetables ; value of meal ; preparation of food ; raw ; steamed ; boiled ; fermented. Gain per day, per month. Season best for fattening. Time of killing.
4. Assortment of parts ; packing of pork ; curing of hams ; making of sausages, &c. &c.
5. Trial of different kinds of food. Corn ; rye ; barley ; oats ; broom corn ; pease ; apples ; potatoes, &c. &c.

XX. Sheep.

1. Breeds ; crosses.
2. Yield in wool. Time of shearing. Mode of washing and cleansing. Mode of doing up the fleece.
3. Yield in mutton. Age for fattening ; mode of fattening. Comparative value of different kinds of feed. Vegetables ; corn ; oats ; oil-cake, &c. &c.

4. General management. Choice of Buck. Time of lambing. Mode of winter keeping.

5. History of particular flocks.

6. Sheep houses. Sheep racks.

XXI. Horses. Mules.

How raised. How kept. Shoeing. General management. Comparative value for labor.

XXII. Animals kept for Breeding.

Bull. Stallion. Ram. Boar.

Valuable points ; defects ; general management.

XXIII. Feeding of Animals.

1. Pasturage. Winter keeping.

2. Soiling of Animals ; articles to be cultivated for this purpose.

3. Cutting feed. Steaming or cooking. Green vegetable ; feed ; dry feed.

XXIV. Poultry.

Kinds ; Management ; Comparative Value.

XXV. Diseases of Domestic Animals.

Of Horses ; Cattle ; Sheep ; Swine ; Poultry ; and remedies.

XXVI. Farm Buildings.

1. Barns. Stables. Styes. Poultry Houses.

2. Modes of fastening and harnessing cattle. Stalls ; mangers ; stanchions ; ropes ; chains ; bows.

3. Yokes and harnesses.

4. Dwelling Houses, with comparative cost of stone, brick, and wood. Improvements in apparatus for cooking ; and for warming houses.

XXVII. Bees.

Cultivation of Feed for Bees. Construction of Hives. Protection against the Bee Moth.

XXVIII. Orchards. Gardens.

1. Varieties of Fruits, with methods of propagation and selection.

2. Varieties of Esculent Vegetables, with methods of cultivation.

XXIX. Diseases of Trees and Plants.

XXX. Injurious Insects and Vermin.

Borer. Canker Worms. Caterpillars. Potato Worms. Tobacco Worm. Slugs. Bee Moth. Turnip Fly. Crows and Black Birds. Woodchucks. Foxes. Field Mice. Rats.

XXXI. Fences.

Stone Walls. Rail Fences. Live Hedges. Hedge and Ditch. Raised Banks, &c.

XXXII. Forest Trees.

1. For Timber. For Fuel.
2. Modes of raising. Care of Forests. Time and modes of cutting.
3. Nurseries of Fruit and Forest Trees.
4. Plants for Hedges and Fences.

XXXIII. General Improvements.

- Clearing Wild Land.
- Removing Stumps and Stones.
- Draining.
- Irrigation.
- Paring and Burning.
- Gravelling low Meadows.
- Improving Peat Meadows.

XXXIV. Great Farming Operations.

1. Ploughing.
2. Sowing ; Planting ; Laying down to Grass.
3. Haymaking.
4. Harvesting.
5. Preserving and Expending the Produce.
6. Marketing.

XXXV. Examples in detail and in full of

1. General Farm Management.
2. Particular Crops.
3. Particular Improvements.

XXXVI. Labor.

1. Farm Labor by the month or year.
2. " by the piece.
3. Cost of Board and prices of Provisions.

4. Use of Spirituous Liquor.
5. Laws and Customs relating to Labor.

Mechanical Labor.

1. Blacksmith. Price per pound of Iron.
 " Price of Horse shoeing. Ox shoeing.
2. Carpenters' Work, per day.
3. Masons' Work, per day.
4. Wheelrights' Work, per piece.
5. General cost of Farming Utensils; Carriages; and Equipments.

XXXVII. Farming Implements, &c.

Ploughs. Harrows. Horse Rakes. Cultivators and Horse Hoes. Threshing Machines. Winnowing Machines. Vegetable Slicers. Hay Cutters. Rollers. Drill Machines. Corn Planters. Corn Shellers. Wheel Carriages. Stump Extractors, &c. &c.

XXXVIII. Condition of Roads and Improvements in Construction of Roads, as intimately connected with the Agricultural Prosperity of a Country.

XXXIX. Miscellaneous Subjects.

1. Size of Farms.
 2. Farm Capital.
 3. Farm Accounts.
 4. Laws relating to Agriculture.
 5. Taxes and Burdens upon Land.
 6. Agricultural Pauper Establishments.
 7. Agricultural and Manual Labor Schools and Colleges.
 8. Agricultural Societies. Funds. Premiums. Operations.
- Cattle Shows.

9. Agricultural Libraries and Publications.

XL. Manufactures connected with Agriculture.

1. Household Manufactures. Manufactures of Wool, silk, flax, hemp, hair, bristles, straw, &c. &c.
2. Leather, with all its various preparations.
3. Glue. Combs. Buttons. Bonnets and Hats from grass, straw, or wool. Wooden Ware. Barrels.

Maple Sugar. Maple Molasses. Beet Sugar. Potato Syrup. Starch. Opium. Sunflower Oil. Indian Corn Oil. Linseed Oil. Neat's foot Oil. Wine from Grapes. Wine from Currants. Cider. Perry. Beer and Ale. Whiskey. Gin. Soap. Candles.

XLI. Objects of Particular Inquiry, with a view to Agricultural Improvements.

1. Improvements in Live stock.
2. " in Utensils and Farm Buildings.
3. " in New Vegetables, Fruits, and Grasses.
4. " in Seeds for earliness and abundant yield.
5. " in economical Preparations and Uses of Food for Man and Beast.
6. " in economical Uses of Fuel.
7. " in economical application of human and brute Labor.
8. " in application of water, steam or wind power to purposes of husbandry.
9. " in cultivation—depth of ploughing ; mixing of soils ; compost manures ; manuring with green crops ; inverting and covering the sward ; drill culture ; sowing broad-cast ; management of any particular crop, &c. &c.
10. Improvements in rotation of crops.
11. " in uses of Lime ; Gypsum ; Bone dust.
12. " in application of Ashes ; crude or spent.
13. " in application or discovery of other manures.
14. " in construction of Farm Buildings.

XLII. Exports and Imports of Agricultural Produce.

Capacity of the State to supply its own Wants. General Views.

XLIII. Specimens of Soil to be analyzed.

Models of improved Implements.

Models of improved Buildings.

Sketches of improved modes of draining lands.

Collection of valuable Seeds or Plants.

Samples of Wool, Silk, and Sugar.

I have thus, sir, laid before you the principal objects designed to be embraced in an Agricultural Survey of the State. It is not of course expected that every farmer, possibly not any single farmer, will be able to give me information on every subject here enumerated; nor will any farm or any town in the Commonwealth furnish examples of all the various crops, operations, and stocks here mentioned. But what is wanting in one, may doubtless be found in another; and as no subject is mentioned in which the agriculture of the State is not directly concerned, it is hoped that much valuable and practical information may be collected in regard to all. It will be my province to gather up the fragments that nothing be lost. I earnestly solicit, therefore, your particular aid in acquiring this information; and the communication of your knowledge or experience, either by writing, conversation, advice, or in any form in which you will please to give it. Any trouble which any gentleman may take upon himself for the purpose of procuring information shall be always most gratefully acknowledged.

My duty will require me to visit every town in the State; and my wish is to visit every principal farm in every town, the management of which promises to afford useful information. In determining what particular farms to visit, it is obvious that I must necessarily be directed by the advice or suggestions of others, which I shall always be most happy to receive; but, in order to avoid all invidiousness, I beg leave to state distinctly, in the outset, that, unless prevented by extraordinary circumstances, I will visit every farmer, who will do me the kindness to invite me to his premises; and I have perfect confidence in finding oftentimes as creditable and instructive management among small farmers as among those who pursue agriculture upon an extensive scale. I therefore solicit such invitations; and will gladly avail myself of them.

I purpose to make the survey by Counties, and am anxious to prosecute it with all convenient despatch. I beg the farmers to whom this Circular is sent, to give it an attentive and repeated examination. The objects of the survey are most important to the farming interest. I go to seek information from practical men; and shall be happy to communicate all that I receive. I

solicit the correspondence and co-operation of such men. It is reasonable to hope that the inquiries will elicit much valuable knowledge ; that they will contribute to excite and strengthen a spirit of improvement in agriculture, this most honorable and useful pursuit ; that they will unfold agricultural resources and capacities of which we were not fully aware ; that they will strengthen those, which already exist and present new reasons for a devoted attachment to our native State ; a State, which, if its soil be comparatively hard and sterile, and its climate severe, is in a high degree favorable to longevity, to strength of muscle, vigor of intellect, and moral energy ; furnishes an ample reward to patient industry, temperance and frugality ; and under the administration of upright magistrates, and wholesome and equal laws, which she has so long and eminently enjoyed, abounds in the elements of domestic comfort, and social improvement and prosperity.

Yours respectfully,

HENRY COLMAN.

Boston, June, 1837.

P. S. Communications and letters relating to the Survey may be addressed to the subscriber at Boston. They may be forwarded by private conveyance to the Post office in Boston, or directly by mail, if otherwise not convenient.

